TOOLS UNLIMITED

PRESENTS

A PREMIUM HAND TOOL LINE

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URREA

PROFESSIONAL TOOLS

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TORQUE WRENCHES

7

A torque wrench is a precision instrument used to apply or preset force on bolts, nuts, wheel studs and nuts, and fasteners on assembled parts. Torque wrenches are available with micrometer (click) or dial mechanisms, analog or digital, and are particularly useful in applications where fasteners (nuts and bolts) must have a specific force applied to them. Common applications include equipment for handling low pressure liquids and gases, control and instrumentation valves, internal combustion engines, air conditioning, bridges and structures, industrial pipes, white line assembly, electrical and electronic equipment, industry, and similar applications.

There are also specialized torque wrenches, primarily for assembly lines, for bolting covers onto electrical or electronic components where it is necessary to repeat the operation without losing the torque precision. Torque multipliers are also used in the automotive and heavy industries; they can apply high torque pressures in very small spaces, replacing lever bars and long wrench handles in applications where precision is needed.

The torque wrenches shown in this section are called precision tools, because they are designed, manufactured, and assembled with high precision, using top-quality components.

- With scales in inches and metric system.
- Available in a wide variety of shapes and designs, with fixed or ratchet heads and comfortable plastic handles.
- Grouped and combined by more than 5 different mechanisms, available in practical cases for transporting and protecting them.
- Square drive hubs are blued and available in 1/4", 3/8", 1/2", 3/4", 1", and 1-1/2" on multipliers.
- Fabricated using high-quality micro-alloy steel. Precision-machined and heat treated to yield the best combination of hardness, strength, and durability.
- All URREA torque wrenches have a tough nickel-chromium coating to prevent corrosion.
- Compliant with American and European domestic and international standards.
- Country of origin stamped permanently and indelibly on each tool, reinforcing their high-quality image. This country of origin mark complies with ASME/ANSI standards and with USA Federal Trade Commission regulations.

URREA Torque Wrenches:

- Offer a widely varied product line with more than 55 torque wrenches.
  - Torque multipliers
  - Torque Verifier
  - Dial torque wrenches
  - Micrometer (click) torque wrenches
  - Electronic Digital torque wrenches
  - Torque screwdrivers

The information presented in this chapter is organized as follows:

- **Technical standards**

- **About torque**

- **Quick selection guide**

- **Detailed product specifications**

- **Safety recommendations**

URREA torque wrenches have been calibrated and certified to achieve the required precision and comply with international standards.

URREA fabricates its tools according to product technical standards.
A product technical standard is a document stating the design and fabrication specifications that must be met to ensure that product's adequate performance.

The only organization that issues international standards is the ISO (International Organization for Standardization), which issues the ISO 9000 series pertaining to quality systems and also issues product technical standards. In the United States there are several organizations that issue or have issued standards, such as GSA/US FEDERAL, ASME, ANSI, and SAE.

The Federal standards for hand tools and the standards that the ANSI previously issued are no longer being updated and are being revised by the ASME.

Under the present system, the ASME's standards regarding hand tools are first reviewed by committees consisting of various tool manufacturers, users, and distributors and are then approved and issued by the ASME.

STANDARDS FOR TORQUE WRENCHES

ASME   ANSI
American National Standards Institute

Hand Torque Tools   B107.14M, 1998

GSA

GGG-W-00686c   Wrench Torque

ISO
International Organization for Standardization

ISO 6789   Hand Torque Tools

DESCRIPTION OF CALIBRATION

To guarantee precision torque wrench performance, a test device applies force to the torque wrench, and when 75% of the desired torque is reached, the torque velocity must not exceed two angle degrees per second. Each torque wrench is tested three times at three different points on its scale. Wrenches are tested at the lowest point (20% of the torque wrench's maximum capacity), an intermediate point on the scale, and the highest point on the scale (the wrench's maximum capacity). The test device must have a measurement accuracy of ± 1%.

CALIBRATION CERTIFICATION

URREA Professional Tools certifies the calibration of its torque wrenches based on the standards cited above, using measurement equipment calibrated and approved by the United States' National Institute of Standards and Technology (NIST).

CALIBRATION RECOMMENDATIONS

Torque wrenches should be calibrated at an approved location by qualified personnel.
The following table is a guide for calibration frequency.

Frequency of use	Recommended calibration frequency
Fewer than 3 hours per week	Every 12 months
3-5 hours per week	Every 6 months
5-25 hours per week	Every 3 months
More than 25 hours per week	Every month

Torque wrenches must also be calibrated any time their maximum torque is exceeded or they are subjected to an impact.

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1 YEAR AÑO
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WHAT IS TORQUE?

Technically:

Torsion or twisting pressure exerted by a force on an element at a known distance from the force, equal to the force multiplied by the perpendicular distance between the force's line of action and the element's center of rotation.

In practice:

Torque is equal to the product of a force multiplied by the distance or length of the lever.

Formula:

T = L x F

Where:

T = Torque

L = Distance or length of lever

F = Force
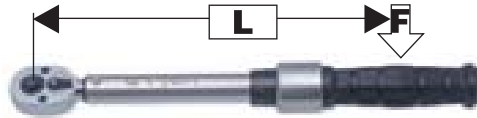
The most common units of measurement used for Distance are: in the English system: inches (in.) or feet (ft.), and in the Metric system: centimeters (cm) or meters (m).

The most common units of measurement used for Force are: in the English system: force-ounces (oz.) or force-pounds (lb.), and in the Metric system: force-kilograms (kg) or Newtons (N).

So the most common units of measurement used for Torque are:

English system	Metric system
Foot-pounds (ft-lb)	Newton-meters (Nm)
Inch-pounds (in-lb)	Kilogram-meters (kgm)
Inch-ounces (in-oz)	DeciNewton-meters (dNm)

Torque wrenches have a graduated scale on which the amount of torque applied can be preset or read, depending on the type of torque wrench. When the scale doesn't correspond to the units used to specify torque, the specification must be converted to the units on the torque wrench's scale. Below are some of the most common conversion factors.

TORQUE CONVERSION FACTORS

Convert From:	Multiply To:	by:	Convert From:	Multiply To:	by:
in-oz	in-lb	0.0625	dNm	Nm	0.10
in-lb	in-oz	16	Nm	dNm	10
in-lb	ft-lb	0.08333	Nm	cmKg	10.2
in-lb	cmKg	1.1519	Nm	mKg	0.102
in-lb	mKg	0.011519	Nm	in-lb	8.85
in-lb	Nm	0.113	Nm	ft-lb	0.7376
in-lb	dNm	1.13	cmKg	in-lb	0.8681
ft-lb	in-lb	12	cmKg	Nm	0.09807
ft-lb	mKg	0.1382	mKg	in-lb	86.81
ft-lb	Nm	1.356	mKg	ft-lb	7.236
dNm	in-lb	0.885	mKg	Nm	9.807

FORMULA FOR CALCULATING TORQUE WHEN AN ADAPTER IS ADDED TO THE TORQUE WRENCH

It is sometimes necessary to use an adapter or extension when working with torque wrenches. The preset torque must then be recalculated, because the total length (from the center of the drive to the center of the centering mark on the handle) has been changed. The following formula is used for the calculation:

$$TW = TA \frac{L}{L + A}$$

Where:

TW = The new torque value to set on the torque wrench with the length of the adapter added. This reading should be less than the wrench's rated torque value.

TA = The fastener's rated torque value.

L = Effective length of the torque wrench measured from the center of the drive to the centering mark on the handle.

A = Length of the adapter, measured from the center of the adapter's handle to the center of the torque wrench's drive.

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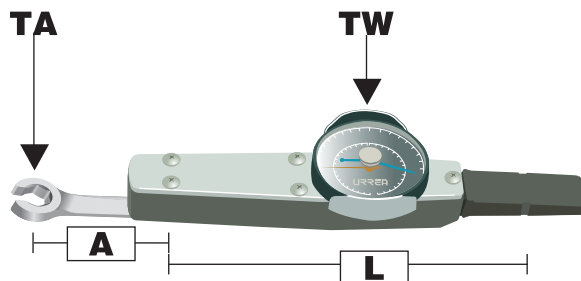
WHAT IS A TORQUE MULTIPLIER?

A Torque Multiplier is a mechanism that increases the torque for applications where a torque wrench can't apply enough force.

The multiplier functions via a system of planetary gears in one or more stages. Since the torque must be multiplied while maintaining the same force, the gear system reduces the velocity.

In the planetary gear system, torque is applied to the planetary gearbox (which contains 3 or 4 gears), and the gear teeth engage with the outer section, which normally rotates in the opposite direction to that of the gearbox. A torque arm keeps the outer section from rotating, which makes the planetary gears orbit around the central "sun" gear. The planetary gears are located on a plate that connects to the output drive. As the planetary gears orbit around the sun gear, the output drive does the same.

Without the torque arm holding the outer section, the output drive applies no torque.

25 revolutions

Input 100 N.m.

= Torque
= Speed

Output 2500 N.m.

0.84 revolutions

REACTION PRINCIPLE

Newton's Law states that any force applied produces an equal and opposite reaction force. For applications requiring relatively low torques that can be applied with a torque wrench, this does not represent a problem, since the reaction is absorbed by the operator.

However, if the desired torque requires the use of a multiplier, the resulting reaction must be absorbed by an appropriate reaction mechanism.

For this reason, torque multipliers are supplied with a reaction system.
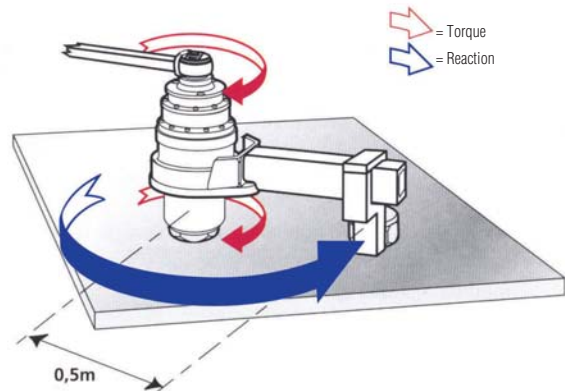
= Torque
= Reaction

A torque output of 2500 Nm will generate a reaction force of 5000 N at a point 0.5 m from the rotation axis, or 2500 N at 1 m.

0,5m
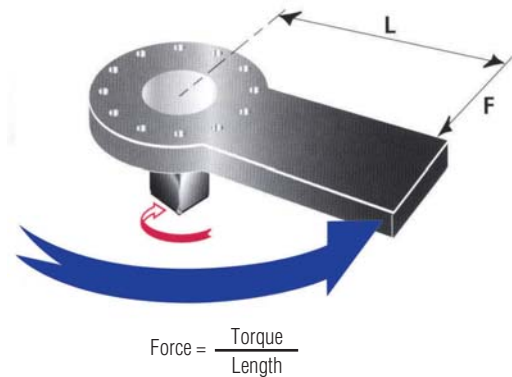
The value of the reaction force depends on the perpendicular component of the distance from the reaction point to the multiplier axis; i.e., the greater the distance, the lower the force.

Therefore, the reaction's point of resistance must be kept as far from the gearbox axis as is feasible.

L

F

$$Force = \frac{Torque}{Length}$$

Although a larger reaction plate means less force, the flexion torque around the multiplier increases. This means that increasing the total length of the torque arm will reduce its resistance, causing incorrect resistance in the reaction and producing multiplication relationships below the margin of error.

WHY USE A TORQUE MULTIPLIER?

SAFETY – Using lever bars can be dangerous. The torque multiplier reduces handle length and operator effort.

SPACE LIMITATIONS – Using a long lever bar may be impossible in the available space.

PRECISION – The applied torque is much more precise when it can be applied smoothly and gradually. The multiplier gives you increased torque while eliminating much of the physical effort needed to tighten the fastener.

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TORQUE CONVERSION FACTOR

Nm = Ft-Lb x 1.356	Nm = In-Lb x 0.1130	Nm = Kg-m x 9.80665	Kg-Cm = Lb-Pulg x .1
Kg-Cm = Lb-Pie x 13.83	Ft-Lb = Nm x 0.73756	Lb-Pie = Nm x 8.8507	Hg-m = Nm x 0.102
Lb-Pulg = Kg-Cm x 0.8677	Lb-Pie = Kg-m x 7.233		

ft lb	0	1	2	3	4	5	6	7	8	9
	N m	N m	N m	N m	N m	N m	N m	N m	N m	N m
0	0	1.36	2.71	4.07	5.42	6.78	8.13	9.49	10.84	12.20
10	13.56	14.91	16.27	17.62	18.98	20.33	21.69	23.05	24.40	25.76
20	27.11	28.47	29.83	31.18	32.54	33.89	35.25	36.61	37.97	39.32
30	40.67	42.02	43.38	44.73	46.09	47.45	48.80	50.16	51.51	52.87
40	54.22	55.58	56.94	58.29	59.65	61.00	62.36	63.71	65.07	66.42
50	67.78	69.14	70.49	71.85	73.20	74.56	75.91	77.27	78.62	79.98
60	81.33	82.69	84.05	85.40	86.76	88.11	89.47	90.83	92.18	93.54
70	94.89	96.25	97.60	98.96	100.31	101.67	103.03	104.38	105.74	107.09
80	108.45	109.80	111.16	112.51	113.87	115.23	116.58	117.94	119.29	120.65
90	122.00	123.36	124.72	126.07	127.43	128.78	130.14	131.49	132.85	134.20
100	135.56									

ft lb X 1.3556 = N m

N m	0	1	2	3	4	5	6	7	8	9
	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb
0	0	.74	1.48	2.21	2.95	3.69	4.43	5.16	5.90	6.64
10	7.38	8.11	8.85	9.59	10.33	11.06	11.80	12.54	13.28	14.01
20	14.75	15.49	16.23	16.96	17.70	18.44	19.18	19.91	20.65	21.39
30	22.13	22.86	23.60	24.34	25.08	25.81	26.55	27.99	28.03	28.76
40	29.50	30.24	30.98	31.72	32.45	33.19	33.93	34.67	35.40	36.14
50	36.88	37.62	38.35	39.09	39.83	40.57	41.30	42.04	42.78	43.52
60	44.25	44.99	45.73	46.47	47.20	47.94	48.68	49.42	50.15	50.89
70	51.63	52.37	53.10	53.84	54.58	55.32	56.05	56.79	57.53	58.27
80	59.00	59.74	60.48	61.22	61.96	62.69	63.43	64.17	64.91	65.64
90	66.38	67.12	67.86	68.59	69.33	70.07	70.81	71.54	72.28	73.02
100	73.76									

1 N m = 0.73756 ft lb

in lb	0	1	2	3	4	5	6	7	8	9
	N m	N m	N m	N m	N m	N m	N m	N m	N m	N m
0	0	.113	.226	.339	.452	.565	.678	.791	.904	1.02
10	1.13	1.24	1.36	1.47	1.58	1.70	1.81	1.92	2.03	2.15
20	2.26	2.37	2.49	2.60	2.71	2.83	2.94	3.05	3.16	3.28
30	3.39	3.50	3.62	3.73	3.84	3.96	4.07	4.18	4.29	4.41
40	4.52	4.63	4.75	4.86	4.97	5.09	5.20	5.31	5.42	5.54
50	5.65	5.76	5.88	5.99	6.10	6.22	6.33	6.44	6.55	6.67
60	6.78	6.89	7.01	7.12	7.23	7.35	7.46	7.57	7.68	7.80
70	7.91	8.02	8.14	8.25	8.36	8.48	8.59	8.70	8.81	8.93
80	9.04	9.15	9.27	9.38	9.49	9.61	9.72	9.83	9.94	10.06
90	10.17	10.28	10.40	10.51	10.62	10.74	10.85	10.96	11.07	11.19
100	11.30									

in lb X .1130 = N m

N m	0	1	2	3	4	5	6	7	8	9
	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb
0	0	8.85	17.70	26.55	35.40	44.25	53.10	61.95	70.81	79.66
10	88.51	97.36	106.21	115.06	123.91	132.76	141.61	150.46	159.31	168.16
20	177.01	185.86	194.72	203.57	212.42	221.27	230.12	238.98	247.82	256.67
30	265.52	274.38	283.22	292.07	300.92	309.77	318.62	327.48	336.33	345.18
40	354.03	362.88	371.73	380.58	389.43	398.28	407.13	415.98	424.83	433.68
50	442.53	451.36	460.24	469.09	477.94	486.79	495.64	504.49	513.34	522.19
60	531.04	539.89	548.74	557.59	566.44	575.30	584.15	592.10	601.85	610.70
70	619.55	628.40	637.25	646.10	654.95	663.80	672.65	681.50	690.35	699.20
80	708.06	716.91	725.76	734.61	743.46	752.31	761.16	770.01	778.86	787.71
90	796.56	805.41	814.26	823.12	831.97	840.82	849.67	858.52	867.37	876.22
100	885.07									

N m X 8.8507 = in lb

in oz	0	1	2	3	4	5	6	7	8	9
	N m	N m	N m	N m	N m	N m	N m	N m	N m	N m
0	0	.007	.014	.021	.028	.035	.042	.049	.056	.064
10	.071	.078	.085	.092	.098	.106	.113	.120	.127	.134
20	.141	.148	.155	.162	.169	.177	.184	.191	.198	.205
30	.212	.219	.226	.232	.240	.247	.254	.261	.268	.275
40	.282	.289	.297	.304	.312	.318	.325	.332	.339	.346
50	.353	.360	.367	.374	.381	.388	.395	.402	.409	.417
60	.424	.431	.438	.445	.452	.459	.466	.473	.480	.487
70	.494	.501	.508	.515	.522	.530	.537	.544	.551	.558
80	.565	.572	.579	.586	.593	.600	.607	.614	.621	.628
90	.635	.642	.650	.657	.664	.671	.678	.685	.692	.699
100	.706									

in oz X .00706 = N m

N m	0	1	2	3	4	5	6	7	8	9
	in oz	in oz	in oz	in oz	in oz	in oz	in oz	in oz	in oz	in oz
.0	0	1.42	2.83	4.25	5.66	7.08	8.50	9.91	11.33	12.74
.1	14.16	15.58	16.99	18.41	19.83	21.24	22.66	24.07	25.49	26.91
.2	28.32	29.74	31.15	32.57	33.99	35.40	36.82	38.23	39.65	41.07
.3	42.48	43.90	45.32	46.73	48.15	49.56	50.98	52.40	53.81	55.23
.4	56.64	58.06	59.48	60.89	62.31	63.72	65.14	66.56	67.97	69.39
.5	70.81	72.22	73.64	75.05	76.47	77.89	79.30	80.72	82.13	83.55
.6	84.97	86.41	87.80	89.21	90.63	92.05	93.46	94.88	96.30	97.71
.7	99.13	100.54	101.96	103.38	104.79	106.21	107.62	109.04	110.46	111.87
.8	113.29	114.70	116.12	117.54	118.95	120.37	121.79	123.20	124.62	126.03
.9	127.45	128.87	130.28	131.70	133.11	134.53	135.95	137.36	138.78	140.19
1.	141.61									

.01 N m X 141.6112 = .01 in oz

m kg	0	1	2	3	4	5	6	7	8	9
	N m	N m	N m	N m	N m	N m	N m	N m	N m	N m
0	0	9.81	19.61	29.42	39.23	49.03	58.84	68.65	78.45	88.26
10	98.07	107.87	117.68	127.49	137.30	147.10	156.90	166.71	176.52	186.33
20	196.13	205.94	215.75	225.55	235.36	245.17	254.98	264.78	274.59	284.40
30	294.20	304.00	313.81	323.62	333.43	343.23	353.04	362.85	372.65	382.46
40	392.27	402.07	411.88	421.69	431.49	441.30	451.11	460.91	470.72	480.53
50	490.33	500.14	509.95	519.75	529.56	539.37	549.17	558.98	568.79	578.60
60	588.40	598.21	608.01	617.82	627.63	637.43	647.24	657.05	666.86	676.66
70	686.47	696.27	706.08	715.89	725.70	735.50	745.30	755.11	764.92	774.73
80	784.53	794.34	804.15	813.95	823.76	833.57	843.37	853.18	862.99	872.79
90	882.60	892.41	902.21	912.02	921.83	931.63	941.44	951.25	961.05	970.86
100	980.67									

m kg (or m kp) = 9.80665 N m

N m	0	1	2	3	4	5	6	7	8	9
	m kg	m kg	m kg	m kg	m kg	m kg	m kg	m kg	m kg	m kg
0	0	.102	.204	.306	.408	.510	.611	.714	.816	.918
10	1.020	1.122	1.224	1.326	1.428	1.530	1.632	1.733	1.835	1.937
20	2.039	2.141	2.243	2.345	2.447	2.549	2.651	2.753	2.855	2.957
30	3.059	3.161	3.263	3.365	3.467	3.569	3.671	3.773	3.875	3.977
40	4.079	4.181	4.283	4.385	4.487	4.589	4.691	4.793	4.895	4.997
50	5.099	5.200	5.302	5.404	5.506	5.608	5.710	5.812	5.914	6.016
60	6.118	6.220	6.322	6.424	6.526	6.628	6.730	6.832	6.934	7.036
70	7.138	7.240	7.342	7.444	7.546	7.648	7.750	7.852	7.954	8.056
80	8.158	8.260	8.362	8.464	8.565	8.667	8.769	8.871	8.973	9.075
90	9.177	9.279	9.381	9.483	9.585	9.687	9.789	9.891	9.993	10.095
100	10.197									

N m X .10197 = m kg (or m kp)

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TORQUE CONVERSION FACTOR

Nm	= Ft-Lb x 1.356	Nm	= In-Lb x 0.1130	Nm	= Kg-m x 9.80665
Kg-Cm	= Lb-Pie x 13.83	Ft-Lb	= Nm x 0.73756	Lb-Pie	= Nm x 8.8507
Lb-Pulg	= Kg-Cm x 0.8677	Lb-Pie	= Kg-m x 7.233		

Kg-Cm	= Lb-Pulg x .1
Hg-m	= Nm x 0.102

(1m kg = 1m kp)

in lb → in oz

| in lb | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
	in oz	in oz	in oz	in oz	in oz	in oz	in oz	in oz	in oz	in oz
0	0	16	32	48	64	80	96	112	128	144
10	160	176	192	208	224	240	256	272	288	304
20	320	336	352	368	384	400	416	432	448	464
30	480	496	512	528	544	560	576	592	608	624
40	640	656	672	688	704	720	736	752	768	784
50	800	816	832	848	864	880	896	912	928	944
60	960	976	992	1008	1024	1040	1056	1072	1088	1104
70	1120	1236	1152	1168	1184	1200	1216	1232	1248	1264
80	1280	1296	1312	1328	1344	1360	1376	1392	1408	1424
90	1440	1456	1472	1488	1504	1520	1536	1552	1568	1584
100	1600									

in lb X 16 = in oz

in oz → in lb

| in oz | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb
0	0	.063	.125	1.88	.250	.313	.375	.438	.500	.563
10	.625	.688	.750	.813	.875	.938	1.000	1.063	1.125	1.188
20	1.250	1.313	1.375	1.438	1.500	1.563	1.625	1.688	1.750	1.813
30	1.875	1.938	2.000	2.063	2.125	2.188	2.250	2.313	2.375	2.438
40	2.500	2.563	2.625	2.688	2.750	2.813	2.875	2.938	3.000	3.063
50	3.125	3.188	3.250	3.313	3.375	3.438	3.500	3.563	3.625	3.688
60	3.750	3.813	3.875	3.938	4.000	4.063	4.125	4.188	4.250	4.313
70	4.375	4.438	4.500	4.563	4.625	4.688	4.750	4.813	4.875	4.938
80	5.000	5.063	5.125	5.188	5.250	5.313	5.375	5.438	5.500	5.563
90	5.625	5.688	5.750	5.813	5.875	5.938	6.000	6.063	6.125	6.188
100	6.250									

in oz ÷ 16 = in lb

ft lb → in lb

| ft lb | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb
0	0	12	24	36	48	60	72	84	96	108
10	120	132	144	156	168	180	192	204	216	228
20	240	252	264	276	288	300	312	324	336	348
30	360	372	384	396	308	420	432	444	456	468
40	480	492	504	516	528	540	552	564	576	588
50	600	612	624	636	648	660	672	684	696	708
60	720	732	744	756	768	780	792	804	816	828
70	840	852	864	876	888	900	912	924	936	948
80	960	972	984	996	1008	1020	1032	1044	1056	1068
90	1080	1092	1104	1116	1128	1140	1152	1164	1176	1188
100	1200									

ft lb X 12 = in lb

in lb → ft lb

| in lb | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb
0	0	.083	.167	.250	.333	.417	.500	.583	.667	.750
10	.833	.917	1.000	1.083	1.167	1.250	1.333	1.417	1.500	1.563
20	1.667	1.750	1.833	1.917	2.000	2.083	2.167	2.250	2.333	2.417
30	2.500	2.583	2.667	2.750	2.833	2.917	3.000	3.083	3.167	3.250
40	3.333	3.417	3.500	3.583	3.667	3.750	3.833	3.917	4.000	4.083
50	4.167	4.250	4.333	4.417	4.500	4.583	4.667	4.750	4.833	4.917
60	5.000	5.083	5.167	5.250	5.333	5.417	5.500	5.583	5.667	5.750
70	5.833	5.917	6.000	6.083	6.167	6.250	6.333	6.417	6.500	6.583
80	6.667	6.750	6.833	6.917	7.000	7.083	7.167	7.250	7.333	7.417
90	7.500	7.583	7.667	7.750	7.833	7.917	8.000	8.083	8.167	8.250
100	8.333									

in lb ÷ 12 = ft lb

in lb → cm kg

| in lb | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
	cm kg	cm kg	cm kg	cm kg	cm kg	cm kg	cm kg	cm kg	cm kg	cm kg
0	0	1.152	2.304	3.456	4.608	5.760	6.912	8.064	9.217	10.36
10	11.52	12.67	13.83	14.97	16.13	17.28	18.43	19.59	20.74	21.89
20	23.04	24.19	25.35	26.49	27.65	28.80	29.96	31.07	32.26	33.41
30	34.56	35.71	36.87	38.02	39.17	40.32	41.47	42.62	43.77	36.60
40	46.09	47.23	48.39	49.54	50.69	51.85	52.99	54.14	55.29	56.45
50	57.61	58.75	59.90	61.06	62.21	63.37	64.51	65.66	66.81	67.96
60	69.13	70.27	71.42	72.57	73.73	74.89	76.03	77.18	78.33	79.49
70	80.65	81.79	82.94	84.05	85.21	86.41	87.58	88.75	89.91	91.00
80	92.17	93.32	94.49	95.66	96.83	97.93	99.08	100.2	101.4	102.6
90	103.7	104.9	106.1	107.2	108.3	109.5	110.7	111.8	112.9	114.1
100	115.2									

in lb X 1.152 = cm kg

cm kg → in lb

| cm kg | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb	in lb
0	0	.868	1.735	2.603	3.471	4.339	5.206	6.074	6.942	7.809
10	8.677	9.545	10.412	11.280	12.148	13.016	13.883	14.751	15.619	16.486
20	17.354	18.222	19.089	19.957	20.825	21.693	22.560	23.428	24.296	25.163
30	26.031	26.899	27.766	28.634	29.502	30.370	31.237	32.105	32.973	33.840
40	34.708	35.576	36.443	37.311	38.179	39.047	39.914	40.782	41.650	42.517
50	43.385	44.253	45.120	45.988	46.856	47.724	48.591	49.459	50.327	51.194
60	52.062	52.930	53.797	54.665	55.533	56.401	57.268	58.136	59.004	59.871
70	60.739	61.607	62.474	63.342	64.010	65.078	65.945	66.813	67.681	68.548
80	69.416	70.284	71.151	72.019	72.887	73.754	74.622	75.490	76.358	77.225
90	78.093	78.961	79.828	80.670	81.564	82.432	83.299	84.167	85.035	85.902
100	86.770									

cm kg X .8677 = in lb

ft lb → m kg

| ft lb | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
	m kg	m kg	m kg	m kg	m kg	m kg	m kg	m kg	m kg	m kg
0	0	0.138	0.277	0.415	0.553	0.691	0.830	0.968	1.106	1.245
10	1.383	1.521	1.660	1.798	1.936	2.074	2.212	2.351	2.489	2.628
20	2.766	2.904	3.043	3.181	3.319	3.457	3.596	3.734	3.872	4.011
30	4.149	4.287	4.426	4.564	4.702	4.840	4.979	5.117	5.255	5.394
40	5.532	5.670	5.809	5.947	6.085	6.223	6.362	6.500	6.638	6.777
50	6.915	7.053	7.191	7.330	7.468	7.606	7.745	7.883	8.021	8.159
60	8.298	8.436	8.574	8.713	8.851	8.989	9.128	9.266	9.404	9.543
70	9.681	9.819	9.957	10.09	10.23	10.37	10.51	10.65	10.79	10.92
80	11.06	11.20	11.34	11.48	11.62	11.75	11.89	12.03	12.17	12.31
90	12.45	12.59	12.73	12.86	13.00	13.14	13.28	13.42	13.55	13.69
100	13.83									

ft lb X .1383 = m kg

m kg → ft lb

| m kg | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb	ft lb
0	0	7.23	14.47	21.70	28.93	36.17	43.40	50.63	57.86	65.10
10	72.4	79.6	86.8	94.0	101.3	108.5	115.7	123.0	130.2	137.4
20	144.7	151.9	159.1	166.4	173.6	180.8	188.1	195.3	202.5	209.8
30	217.0	224.2	231.5	238.7	245.9	253.2	260.4	267.6	274.9	284.1
40	289.3	296.6	303.9	311.0	318.3	325.5	332.7	340.0	347.2	354.4
50	361.7	368.9	376.1	383.3	390.6	397.8	405.0	412.3	419.5	426.7
60	434.0	441.2	448.4	455.7	462.9	470.1	477.4	484.6	491.8	499.1
70	506.3	513.5	520.8	528.0	535.2	542.5	549.7	556.9	564.2	571.4
80	578.6	585.9	593.1	600.3	607.6	614.8	622.0	629.3	636.5	643.7
90	651.0	658.2	665.4	672.7	679.9	687.1	694.4	701.6	708.8	716.1
100	723.3									

m kg X 7.233 = ft lb

MULTIPLIERS AND MULTITORQUE

CODE	RANGE	FEMALE DRIVE	MALE DRIVE	TORQUE MULTIPLIERS 331	TORQUE MULTIPLIERS 331	MULTITORQUE 332	MULTITORQUE 332
6234	2500 Lb-ft	3/4	1	●			
6242	5100 Lb-ft	3/4	1	●			
6252	8000 Lb-ft	3/4	1 1/2	●			
6262	11750 Lb-ft	3/4	2 1/2	●			
6202A	590 Lb-ft	1/2	3/4		●		
6212	1000 Lb-ft	3/4	3/4		●		
6222	2200 Lb-ft	3/4	1		●		
6232	3600 Lb-ft	3/4	1 1/2		●		
J6360						●	
J6360A	1-10 in-lb		1/4				●
J6360B	5-50 in-lb		1/4				●
J6360C	20-200 in-lb		1/4				●
J6360D	10-100 ft-lb		3/8				●
J6360E	25-50 ft-lb		1/2				●
J6360F	60-600 ft-lb		3/4				●

TESTERS AND TORQUE WRENCHES

CODE	RANGE ENGLISH	METRIC	DRIVE	TORQUE TESTERS 333	DIAL TORQUE WRENCHES 334	DIAL 335	DIAL 336	MICRO-ADJUSTABLE 336	MICRO-ADJUSTABLE 337	PREADJUSTED 337	TORQUE DRIVERS 338	TORQUE DRIVERS 338
6210	5-50 in-lb	5.65-56.5 dNm	1/4"	●								
6211	25-250 in-lb	28.3-283 dNm	3/8"	●								
6211A	100-1000 in-lb	113-1130 dNm	3/8"	●								
6213	25-250 ft-lb	33.9-339 Nm	1/2"	●								
6200	5-50 in-lb	5.6-56 dNm	1/4"		●							
6201	2-20 ft-lb	2.8-28 Nm	3/8"		●							
6203	5-50 ft-lb	6.8-67.7 Nm	3/8"		●							
6204	25-250 ft-lb	34-388 Nm	1/2"		●							
6112	0-30 in-lb	0-3.5 Nm	1/4"			●						
6007A	0-150 in-lb	0-18 Nm	3/8"			●						
6177A	0-250 in-lb	0-30 Nm	3/8"			●						
6178A	0-300 in-lb	0-35 Nm	3/8"			●						
6113	0-50 ft-lb	0-70 Nm	3/8"			●						
6121A	0-175 ft-lb	0-240 Nm	1/2"			●						
6125	0-250 ft-lb	0-350 Nm	1/2"			●						
61262	0-250 ft-lb	0-350 Nm	1/2"				●					
6134A	0-350 ft-lb	0-480 Nm	3/4"			●						
6133	0-600 ft-lb	0-800 Nm	3/4"			●						
6179E	0-1000 ft-lb	0-1400 Nm	1"			●						
6061A	10-50 in-lb	1-7 Nm	1/4"					●				
6062A	20-150 in-lb	2-178 Nm	1/4"					●				
6064A	30-250 in-lb	3-28 Nm	3/8"					●				
6066A	100-750 in-lb	11-85 Nm	3/8"					●				
6006	5-75 ft-lb	5-100 Nm	3/8"					●				
6007	10-80 ft-lb	10-110 Nm	3/8"						●			
6012A	10-100 ft-lb	10-140 Nm	3/8"					●				
6016	20-150 ft-lb	20-210 Nm	1/2"					●				
60143	50-250 ft-lb	40-350 Nm	1/2"					●				
6020	100-600 ft-lb	140-820 Nm	3/4"					●				
6021	200-1000 ft-lb	270-1360 Nm	1"					●				
6022	300-2000 ft-lb	400-2720 Nm	1"					●				
6000	1-5 ft-lb		1/4"							●		
6001	3-9 ft-lb		3/8"							●		
6002	10-50 ft-lb		3/8"							●		
6003	45-150 ft-lb		1/2"							●		
6105A	20-100 in-oz		HEX 1/4								●	
6106A	3-15 in-lb		HEX 1/4								●	
6107A	5-40 in-lb		HEX 1/4								●	
6010	6-32 in-oz	0.5-2.5 cNm	HEX 1/4									●
6011	10-100 in-oz	5-80 cNm	HEX 1/4									●
6012	.5-15 in-lb	20-200 cNm	HEX 1/4									●
6013	4-40 in-lb	45-450 cNm	HEX 1/4									●

URREA

A torque multiplier is a tool used to increase an applied torque value by a specific amount. It functions on a principle similar to the gearing in a transmission gearbox or the chain and sprockets on a bicycle. It has a female drive handle that receives the input torque and a male drive handle that is normally larger, into which a socket is inserted to fit the size of the nut or bolt to be torqued. When the female drive is turned, usually with a torque wrench, the gearing system turns and moves the male drive at a slower speed, with the resulting increase in torque.

Multipliers are classified as follows, by type of reaction system:
- Multipliers with slave reaction system, consisting of a plate with a sliding anchorage.
- Multipliers with free reaction system, consisting of a tubular bar.

TORQUE MULTIPLIERS WITH SLAVE REACTION

62XX

CODE	MAXIMUM INPUT TORQUE ft-Lb	MAXIMUM OUTPUT TORQUE ft-Lb	TORQUE RATIO	PRECISION %	REACTION SYSTEM	FEMALE DRIVE in	MALE DRIVE out	REACH MINIMUM in	MINIMUM mm	MAXIMUM in	MAXIMUM mm	OVERLOAD	DIAMETER A mm	HEIGHT B mm	LENGTH C mm	grs	lbs
6234	208	2500	12-1	+/-5	Plate with slave drive	3/4	1	4 3/4"	120	7 5/8"	195	YES	89	170	270	6000	13.23
6242	121	5100	42-1	+/-7.5	Plate with slave drive	3/4	1 1/2	6 3/4"	170	10 5/8"	270	YES	130	247	380	17000	37.48
6252	154	8000	52-1	+/-7.5	Plate with slave drive	3/4	1 1/2	7 3/4"	196	11 5/8"	296	YES	148	256	420	22500	49.60
6262	181	11750	65-1	+/-7.5	Plate with slave drive	3/4	2 1/2	8 3/4"	223	13 5/8"	343	YES	215	274	505	41000	90.39
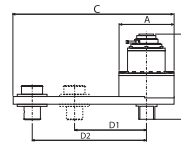
Code 62XX
Torque Multiplier

Torque multipliers are very useful for building and maintaining machinery and in the automotive field, where high torque is required and the use of long lever bars is impossible or dangerous. They are also more precise and eliminate physical effort.

TORQUE MULTIPLIERS WITH FREE REACTION

62XX

CODE	MAXIMUM INPUT TORQUE ft-Lb	MAXIMUM OUTPUT TORQUE ft-Lb	TORQUE RELATION	TORQUE RATIO PRECISION %	REACTION SYSTEM	FEMALE DRIVE in	MALE DRIVE out	OVERLOAD PROTECTION	DIAMETER A mm	HEIGHT B mm	LENGTH C mm	gr	lbs
6202A	168	590	1-3.5	+/-5	Tubular bar	1/2"	3/4"	NO	66	84	215	2000	4.40
6212	286	1000	1-3.5	+/-5	Tubular bar	3/4"	3/4"	NO	84	100	265	3000	6.61
6222	183	2200	1-12	+/-5	Tubular bar	3/4"	1"	YES	89	150	330	6000	13.22
6232	300	3600	1-12	+/-5	Tubular bar	3/4"	1 1/2"	YES	114	182	400	9500	20.94
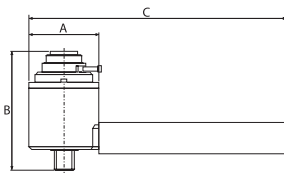
TORQUE MULTIPLIER REPLACEMENT

62XXR

6234R	For model 6234
6242R	For model 6242
6252R	For model 6252
6262R	For model 6262
6202AR	For model 6202A
6212R	For model 6212
6222R	For model 6222
6232R	For model 6232

GRUPO URREA
THE TOTAL SOLUTION IN TOOLS

1 YEAR / AÑO GUARANTEED / GARANTIZADO

URREA

This is a portable torque analyzer with a highly versatile data collection system that can be used with sockets, extensions, universal joints, ratchet handles, hinge handles, or any combination of these. The electronic multitorque displays readings from sensors placed between the socket and the drive accessory. It has a wide, angled LCD screen with output readings in ft-lb, in-lb, in-oz, Nm, dNm, mkg, and cmkg, depending on the sensor used. It can store and recover up to 3500 readings.

The desired torque is set using a touchpad button. Upper and lower limits can be set to generate visual and audible alarm signals. It can be used in Track mode, which shows torque values as they are applied, or in Peak mode, which shows only the highest value applied.

The sensors are smart, i.e., they remember identification and calibration factors, because they contain an EEPROM chip, calibrated at the factory, which keeps all multitorques accurate. They require periodic calibration, which can be done on the multitorque itself.

Features of the multitorque torque analyzer:
- 4-digit screen with alphanumeric function indicators.
- 4-digit screen capacity, 8000 values.
- Reading accuracy of ± 1% (10-100% of sensor range), ± 2% with J6360A sensor.

Keypad with buttons for high/low alarm, zero tare, adjustments, units, store, retrieve, delete, send, statistics, enter.
- Units of measure: ft-lb, in-lb, in-oz., Nm, dNm, mkg and cmkg.
- Operating temperature: 23-42°C (40-100°F).
- Storage: -20 to +50°C (-2 to +122°F).
- Humidity up to 90%, non-condensing.
- Dimensions: 3" wide, 6" long, 2.5" high (3" with clip).
- Weight: 1 pound.
- Full battery charge gives 20 hours of continuous operation.
- 120 VAC or 220 VAC (50-60 Hz) battery chargers.
- Output: 9 VDC, 200 mA.
- Data for storing/retrieving 3500 measurements.
- RS-232 (real) serial output port, 300 19.2 K baud, and Mitutoyo (statistics protocol).
- Analysis of statistics: max., min., range, mean, sigma N, sigma, cp, cpk, % error, -nogo, +nogo.

DIGITAL MULTITORQUE WITH DATA COLLECTION SYSTEM

J6360

CODE	LENGTH		WIDTH		HEIGHT			
	in	mm	in	mm	in	mm	grs	lbs
J6360	6"	152.4	3"	76.2	2.5 (3 WITH CLIP)	63.5 (76.2 WITH CLIP)	454	1.00

J6360X
SENSORS

CODE	TORQUE RANGE	DRIVE
J6360A	1-10 in-lb	Drive sensor 1/4"
J6360B	5-50 in-lb	Drive sensor 1/4"
J6360C	20-200 in-lb	Drive sensor 1/4"
J6360D	10-100 ft-lb	Drive sensor 3/8"
J6360E	25-250 ft-lb	Drive sensor 1/2"
J6360F	60-600 ft-lb	Drive sensor 3/4"

Code J6360X
Sensors

The multitorque was designed for verifying torque on assembly and manufacturing lines. It can be used for process auditing, because it stores data for statistical process control.

1 YEAR AÑO

Quality Superior
Affordable Tools

The electronic torque tester is used primarily to verify that the precision of dial and click torque wrenches, as well as torque drivers, is still within their calibration ranges. It is portable and operates on batteries or AC current. It differs from a calibration system in that the torque tester does not generate certificates.

It can be mounted in any vertical or horizontal position.

Features of the electronic torque tester:
- Built-in transducer with solid housing, so unit can be mounted in practically any position.
- Unique neck design allows the operator to view the screen when testing long torque wrenches.
- Accuracy: ± 5% of the value indicated (10-100% of total range), ± 1 increment or last significant digit.
- Dual scale (English/Nm)
- Auto/manual screen readjustment.
- Bi-directional read (left and right).
- Rechargeable NiCad batteries.
- Designed as a reliable, low-cost torque tester, can be mounted on the factory wall, on a portable cart, or at a work bench, so operators can check their torque wrenches without leaving their stations.

ELECTRONIC TORQUE TESTER

621X / 621XX

CODE	LENGTH		WIDTH		HEIGHT		DRIVE	TORQUE RANGE			
	in	mm	in	mm	in	mm		ENGLISH	METRIC	grs	lbs
6210	14.6"	370.8	3"	76.2	2.5"	63.5	1/4"	5-50 in-lb	5.65-56.5 dNm	2043	4.50
6211	14.6"	370.8	3"	76.2	2.5 "	63.5	3/8"	25-250 in-lb	28.3-283 dNm	2043	4.50
6211A	14.6"	370.8	3"	76.2	2.5"	63.5	3/8"	100-1000 in-lb	113-1130 dNm	2043	4.50
6213	14.6"	370.8	3"	76.2	2.5 "	63.5	1/2"	25-250 ft-lb	33.9-339 Nm	2043	4.50

7
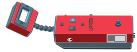
safetystartswithU

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GUARANTEED
1 YEAR AÑO
GARANTIZADO

COMPUTORQUE ELECTRONIC TORQUE WRENCHES

The electronic torque wrench is the most advanced and user-friendly type of torque wrench. It has many applications, including precision torquing for critical fasteners and quality control tests. Easy to program: just set the desired torque, including upper and lower limits, and the torque wrench will beep when the preset torque is reached. If it is exceeded, an alarm tone will sound and a red light will flash. Requires only minimal maintenance.

Computorque features:

- Accuracy: ± 1% over 20-100% of the scale.
- ± 1%, plus 5 increments, over 10-20% of the scale.
- Ample memory for storing torque data.
- The newest electronic torque wrench available on the market.
- High repeatability and precision.
- Micro-processor technology with force meter.
- Selectable operating modes (Peak or Track mode).
- Can download torque data to a computer or printer via an RS232 port.
- Easy torque parameter adjustment.
- Wide range of torque capacities.
- Uses standard 9-vold alkaline batteries for 60 hours of operation.
- Visual and audible indicators.
- Analog bar graph.
- Indicates desired torque value with HIGH/LOW shown as percentages.
- Seven selectable torque units: ft-lb, in-lb, in-oz, Nm, dNm, mkg, or cmkg.
- Overload indicator.
- Stand-by mode to save batteries.
- Can recall up to 999 stored torque values on the screen.
- Downloads to peripheral devices.
- Audible tone for accepting data through the keypad.
- Low battery indicator.

62XX

CODE	LENGTH in	mm	MULTI-SCALE TORQUE RANGE	MULTI-SCALE INCREMENT	SQUARE DRIVE	grs	lbs
6200	13.5"	343	5-50 in-lb	0.01 in-lb	1/4"	680	1.50
			0.4-4.2 ft-lb	0.001 ft-lb			
			5.6-56 dNm	0.01 dNm			
			0.56-5.6 Nm	0.01 Nm			
			5.7-57 cmKg	0.01 cmKg			
			0.057-0.57 mKg	0.001 mKg			
6201	14.9"	378	25-250 in-lb	0.1 in-lb	3/8"	900	1.98
			2-20 ft-lb	0.01 ft-lb			
			28-282 dNm	0.1 dNm			
			2.8-28 Nm	0.01 Nm			
			29-288 cmKg	0.1 cmKg			
			0.29-2.88 mKg	0.001 mKg			
6203	14.9"	378	60-600 in-lb	0.1 in-lb	3/8"	900	1.98
			5-50 ft-lb	0.01 ft-lb			
			68-677 dNm	0.1 dNm			
			6.8-67.7 Nm	0.01 Nm			
			69.1-691 cmKg	0.1 cmKg			
			0.7-6.9 mKg	0.001 mKg			
6204	21.5"	546	300-3000 in-lb	1 in-lb	1/2"	1450	3.20
			25-250 ft-lb	0.1 ft-lb			
			340-3380 dNm	2 dNm			
			34-388 Nm	0.1 Nm			
			340-3400 cmKg	2 cmKg			
			3.4-34 mKg	0.01 mKg			

6200

6201

6203

6204

Code 62XX
Electronic Torque Wrench

More than just an ordinary torque wrench, the electronic torque wrench is a value processor. It is easy to program the desired value, with upper and lower limits, and the unit can communicate with a computer and printer, making it very useful for process control.

URREA

DIAL TORQUE WRENCHES

Practical device that displays torque measurements on a dial, so that the user can rapidly and accurately identify the torque applied.

With 3/8" to 3/4" square drives, this type of torque wrench measures applied torque with a needle that rotates on a dial with a graduated scale, in both metric and English measurement systems.

These wrenches have a graduated dial (in ft-lb and Nm) and two needles: one indicates the torque applied and the other is a memory needle that indicates the maximum torque applied last time. The rotating dial lets you choose between inner and outer scales, depending on the direction in which torque will be applied or the type of thread on the fastener. The outer scale is used for right threads, and the inner scale for left threads. All metal parts are made of tempered steel, and outer parts have a nickel-chromium coating.

Operating instructions:

Before using the analog, or dial, torque wrench models, it is recommended to run them 3 times through the full scale in the torquing direction in which they will be used. Analog torque wrenches should always be zeroed before using.

1. Rotate the mark on the dial until the main needle is at zero on the selected scale.
2. Turn the knob for the memory needle until it is aligned with zero. If the main needle is turned to the right (for right threads), the memory needle should be positioned on the right side of the main needle, and vice versa for torque to the left.
3. Apply force on the torque wrench handle until the blue memory needle reaches the desired torque. When the force is eased, the orange tracking needle returns to zero and the memory needle remains at the value of the torque applied.
4. For repeated torquing operations, the blue memory needle should be reset to zero using the knob.

60XXX / 61XXX
DIAL TORQUE WRENCHES, in-lb

| CODE | LENGTH | | TORQUE RANGE | INCREMENT | TYPE OF | DRIVE | | |
	in	mm	DUAL SCALE	DUAL SCALE	HEAD		grs	lbs
6112	10"	254	0-30 in-lb	0.5 in-lb	FIXED	1/4"	454	1.00
			0-3.5 Nm	0.1 Nm				
6007A	10"	254	0-150 in-lb	2 in-lb	FIXED	3/8"	454	1.00
			0-18 Nm	0.5 Nm				
6177A	10"	254	0-250 in-lb	5 in-lb	FIXED	3/8"	454	1.00
			0-30 Nm	0.5 Nm				
6178A	10"	254	0-300 in-lb	5 in-lb	FIXED	3/8"	454	1.00
			0-35 Nm	1 Nm				

6112

6007A

6177A

6178A

61XX / 61XXX
DIAL TORQUE WRENCHES, ft-lb

| CODE | LENGTH | | TORQUE RANGE | INCREMENT | TYPE OF | DRIVE | | |
	in	mm	DUAL SCALE	DUAL SCALE	HEAD		grs	lbs
6113	14.88"	378	0-50 ft-lb	1 ft-lb	FIXED	3/8"	790	1.74
			0-70 Nm	2 Nm				
6121A	21.5"	546	0-175 ft-lb	5 ft-lb	FIXED	1/2"	1250	2.76
			0-240 Nm	5 Nm				
6125	21.5"	546	0-250 ft-lb	5 ft-lb	FIXED	1/2"	1250	2.76
			0-350 Nm	10 Nm				
61262	23.2"	590	0-250 ft-lb	5 ft-lb	RATCHET	1/2"	1360	3.00
			0-350 Nm	10 Nm				
6134A	28"	708	0-350 ft-lb	10 ft-lb	FIXED	3/4"	2610	5.75
			0-480 Nm	10 Nm				
6133	46.5"	1181	0-600 ft-lb	10 ft-lb	FIXED	3/4"	4200	9.26
			0-800 Nm	20 Nm				
6179E	74"	1879	0-1000 ft-lb	20 ft-lb	FIXED WITH	1"	13610	30.00
			0-1400 Nm	25 Nm	LIGHT AND ALARM			

6113

6121A

6125

61262

6134A

6133

6179E

335

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MICROMETER/CLICK TORQUE WRENCHES

On this type of torque wrench, the desired torque is set before performing the operation, and when torque is applied there is a click that can be heard and felt, indicating that the preset torque has been reached. When you stop applying force to the torque wrench, it is automatically ready for a new operation. It has graduated scales in the English and metric systems, laser-etched on the bar. They are horizontal on the bar and vertical on the handle.

The continuous-use design gives the user an excellent precision tool for specific torques.

All parts are made of steel and tempered to prevent wear. External parts have a nickel–chromium coating to prevent rust. The lever on the ratchet handle head has two positions, allowing ratchet action to the left or to the right, and fixed action with the lever in the center position.

Double structure: The exclusive internal design minimizes the amount of effort required, reduces friction, extends the life of the torque wrench, and provides calibration precision and retention. Accuracy: ± 3% to the right, from 20 to 100% on the scale.

Setting torque values:
1. Pull the ring back as far as it will go and hold it.
2. Turn the torque wrench's handle to the desired torque.
3. Release the ring.
4. The torque wrench is ready to operate.

1   2   3

606XA

MICRO-ADJUSTABLE CLICK TORQUE WRENCHES, in-lb

CODE	LENGTH		TORQUE RANGE	INCREMENT	TYPE OF	DRIVE		
	in	mm	DUAL SCALE	DUAL SCALE	HEAD		grs	lbs
6061A	9 15/16"	251	10-50 in-lb	1 in-lb	RATCHET	1/4"	380	0.83
			1-7 Nm	0.1 Nm				
6062A	10 1/8"	258	20-150 in-lb	1 in-lb	RATCHET	1/4"	400	0.88
			2-17 Nm	0.1 Nm				
6064A	11 1/4"	286	30-250 in-lb	1 in-lb	RATCHET	3/8"	430	0.94
			3-28 Nm	0.1 Nm				
6066A	15 1/2"	394	100-750 in-lb	5 in-lb	RATCHET	3/8"	1130	2.49
			11- 85Nm	0.5 Nm				

6061A

6062A

6064A

6066A

60XX / 60XXX

MICRO-ADJUSTABLE CLICK TORQUE WRENCHES, ft-lb

CODE	LENGTH		TORQUE RANGE	INCREMENT	TYPE OF	DRIVE		
	in	mm	DUAL SCALE	DUAL SCALE	HEAD		grs	lbs
6006	15 1/2"	394	15-75 ft-lb	0.5 ft-lb	RATCHET	3/8"	1130	2.49
			5-100Nm	0.1 Nm				
6007	16 9/16"	421	10-80 ft-lb	2 ft-lb	RATCHET	3/8"	1130	2.49
			10-110 Nm	2 Nm	HINGE			
6012A	15 3/4"	400	10-100 ft-lb	1 ft-lb	RATCHET	3/8"	0.920	2.02
			10-140 Nm	1 Nm				
6016	19"	482	20-150 ft-lb	1 ft-lb	RATCHET	1/2"	1220	2.68
			20- 210 Nm	1 Nm				
60143	24 7/16"	620	50-250 ft-lb	1 ft-lb	RATCHET	1/2"	1330	2.93
			40- 350 Nm	1 Nm				
6020	42 1/4'	1073	100-600 ft-lb	5 ft-lb	RATCHET	3/4"	4490	9.89
			140- 820 Nm	5 Nm				
6021	70"	1778	200-1000 ft-lb	5 ft-lb	RATCHET	1"	10430	22.99
			270- 1360 Nm	5 Nm				
6022	108 1/2"	2756	300-2000 ft-lb	10 ft-lb	RATCHET	1"	22110	48.74
			400- 2720 Nm	10 Nm				

6006

6007

6012A

6016

60143

6020

6021

6022

Click torque wrenches are easy to operate and have many uses in the automotive and aviation industries, since their click system reduces the possibility of error.

1 YEAR AÑO
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PREADJUSTED TORQUE WRENCHES

Designed for use on production and assembly lines, where a specific torque is required for repetitive operations.
Accuracy: ± 3% to the right, from 20 to 100% on the scale.

Setting torque values:

1. To set torque values, loosen the set screw with a 3/32" Allen wrench.
2. Insert a T-handle hex wrench through the hexagonal adjustment opening in the back of the handle, until it engages the adjustment screw.
3. Place the wrench in a torque meter. Turn the adjustment screw with the T-handle hex wrench, clockwise to increase the torque and counterclockwise to reduce it.
4. To adjust the torque, apply constant force slowly on the preadjusted wrench. Turn the adjustment screw until the desired torque value appears on the torque meter.
5. Tighten the set screw. To be sure that the wrench adjustment can be repeated, go through the cycle three more times. If the desired readings are not obtained, repeat the preceding steps.

600X
PREADJUSTED TORQUE WRENCHES

CODE	LENGTH in	mm	TORQUE RANGE SINGLE ESCALE	TYPE OF HEAD	DRIVE	grs	lbs
6000	6 1/2"	165	1-5 ft-lb	RATCHET	1/4"	230	0.50
6001	7 1/4"	184	3-9 ft- lb	RATCHET	3/8"	400	0.88
6002	11 1/2"	292	10-50 ft- lb	RATCHET	3/8"	680	1.50
6003	19 3/4"	501	45-150 ft- lb	RATCHET	1/2"	340	0.74

6000

6001

7

6002

6003

qualitystartswith U

ABS Quality Evaluations

CERTIFICATE OF CONFORMANCE
This is to certify that the Quality Management System of:
Urrea Herramientas Profesionales, S. A. De C.V.

Km. 11.5 Carr. A El Castillo
El Salto, Jalisco
México

has been assessed by ABS Quality Evaluations, Inc. and found to be in conformance with the requirements set forth by:

ISO 9001:2000
The Quality Management System is applicable to:

DESIGN, MANUFACTURE AND COMMERCIALIZATION OF TOOLS

URREA Professional Tools received the ISO 9000 certification in November 1998 and updated to ISO 9001: 2000 certification in February 2004. This certification represents our constant commitment to maintain our operating and product manufacturing standards.

Visit our website: www.urrea.com

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THE TOTAL SOLUTION IN TOOLS

URREA

This is a cam-based torque limiter designed to prevent application of excessive torque, thereby reducing costs related to damage, rejects, and reworking. It permits the application of torque in a clockwise direction and automatically blocks it in the opposite direction, which permits bolts to be loosened. There are two styles of torque driver: micro-adjustable and preadjusted.

Accuracy: ± 6% to the right, from 20 to 100% on the scale.

Features:
- Easy to use.
- Comfortable three-sided handle.
- Magnetic 1/4" chuck with interchangeable tips.
- Cam-based torque limiter.
- Easy-to-read scale.
- Lightweight.
- Automatically blocks clockwise rotation.

MICRO-ADJUSTABLE TORQUE DRIVERS

Setting torque values on micro-adjustable torque drivers:
1. To unlock, hold the driver body and pull the adjustment knob back forcefully.
2. Set the driver to the desired torque.
3. Push the adjustment knob back in to lock in the setting.
4. The torque driver is ready to use.

610XA

| CODE	LENGTH		TORQUE RANGE SINGLE SCALE	INCREMENT SINGLE SCALE	HEX	grs	lbs
	in	mm					
6105A	3 7/8"	97	20-100 in-oz	1.0 in-oz	1/4"	162	0.36
6106A	4 1/2"	117	3-15 in-lb	0.2 in-lb	1/4"	176	0.39
6107A	5 1/8"	130	5-40 in-lb	0.5 in-lb	1/4"	264	0.58

PREADJUSTED TORQUE DRIVERS

The desired torque can be set easily on preadjusted torque drivers with any torque calibration system:
1. Remove the back cover to access the adjustment screw.
2. Place the torque driver in a torque meter and measure the current value.
3. Adjust the driver to the desired torque, using a 1/8" Allen wrench (included with every torque driver). Clockwise increases the torque value and counterclockwise decreases it.
4. Confirm the new torque value in the meter, repeating two or three times. If necessary, repeat the preceding steps until the torque value reaches the desired value.
5. When the desired value is obtained, replace the back cover.
6. The torque driver is ready to use.

601X

CODE	LENGTH		TORQUE RANGE ENGLISH SCALE	TORQUE RANGE METRIC SCALE	HEX	grs	lbs
	in	mm					
6010	4 1/2"	115	6-32 in-oz	0.5-2.5 cNm	1/4"	176	0.38
6011	5 5/8"	142	10-100 in-0z	5-80 cNm	1/4"	227	0.50
6012	5 5/8"	142	1.5-15 in-lb	20-200 cNm	1/4"	227	0.50
6013	6"	152	4-40 in-lb	45-450 cNm	1/4"	301	0.66

6010

6011

6012
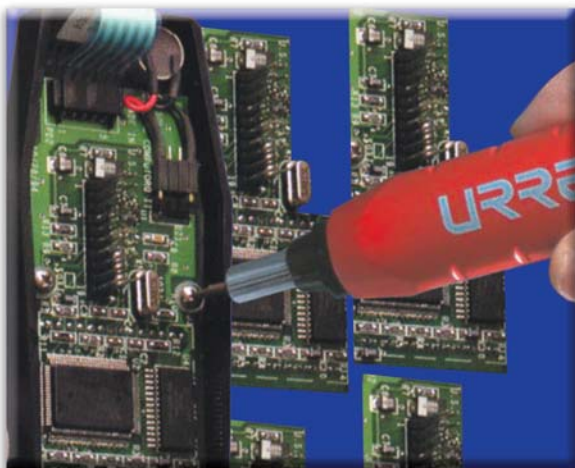
Torque drivers are used primarily in the electronics industry and for assembly operations.

1 YEAR AÑO — GUARANTEED / GARANTIZADO

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When using a torque multiplier, always operate it with a torque wrench, never with power or impact tools.

Make sure that the reaction arm is properly supported against a fixed object.

Never try to hold the multiplier or reaction arm with your hand.

Always hold the torque wrench firmly in the center of the handle. When applying torque, always pull, never push, and make sure that you are in a stable and comfortable position to prevent falls and injuries.

Do not use torque wrenches with damaged bolts or nuts.

Never use levers or extensions, they may cause incorrect readings.

Do not use sockets in poor condition with a torque wrench.

Never strike the torque wrench.

Lubricate the ratchet mechanism and store the torque wrench set in its lowest range (no tension).

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